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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/630,287

07/30/2003

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EXAMINER

PATEL, NIKETA I

ART UNIT

PAPER NUMBER

2181

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/630,287	Applicant(s) GEORGE ET AL.	
	Examiner NIKETA I. PATEL	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. In view of the Appeal Brief filed on 12/20/2007, PROSECUTION IS HEREBY REOPENED. A new art rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Alford W. Kindred/

Supervisory Patent Examiner, Art Unit 2163

Alford Kindred.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

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be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20, 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zuraski et al. U.S. Patent Number: 6,510,508 B1 (hereinafter "*Zuraski*") and further in view of Sindhu U.S. Patent Number: 5,230,045 (hereinafter "*Sindhu*").
4. **Referring to claims 1, 6, 11, 17,** *Zuraski* teaches a method comprising: invalidating an entry of a filter coupled to a pipeline resource if an update to the entry occurs during a context [see column 9, lines 48-61 and column 11, lines 14-20]; and flushing an entry [see column 13, lines 3-11, some addresses are no longer valid, consequently those entries are flushed] however does not set forth the limitation of flushing a portion of the pipeline resource corresponding to an address space including the entry. *Sindhu* teaches the limitation of flushing a portion of the pipeline resource corresponding to an address space including the entry [see column 15, line 65 to column 16, line 20 - flush entry, flush space and flush cache] in order to provide a space and time efficient address translation technique for use with multiple address space which would permit flexible access to shared data.

One of ordinary skill in the art at the time of applicant's invention would have clearly recognized that it is quite advantageous for the system of *Zuraski* to implement the limitation of flushing a portion of the pipeline resource corresponding to an address space including the entry in order to provide a space and time efficient address translation technique for use with multiple

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address space which would permit flexible access to shared data. It is for this reason that one of ordinary skill in the art would have been motivated to implement the limitation of flushing a portion of the pipeline resource corresponding to an address space including the entry.

5. **Referring to claim 2**, the combination of *Zuraski* and *Sindhu* teaches further comprising flushing the portion upon a switch from the context [see column 11, lines 1-20.]

6. **Referring to claims 3, 9, 18**, the combination of *Zuraski* and *Sindhu* teaches wherein the pipeline resource comprises a translation lookaside buffer [see column 9, lines 30-45 and figure 2, element 39, 'TLB'.]

7. **Referring to claim 4**, the combination of *Zuraski* and *Sindhu* teaches further comprising comparing an address obtained from an external snoop to a plurality of entries in the filter to determine if the update has occurred [see column 10, lines 1-17.]

8. **Referring to claim 5**, the combination of *Zuraski* and *Sindhu* teaches further comprising flushing the portion of the pipeline resource via microcode [see column 4, lines 11-29.]

9. **Referring to claims 7, 12**, the combination of *Zuraski* and *Sindhu* teaches further comprising selectively flushing the portion of entries upon a switch from the context [see column 9, lines 48-61.]

10. **Referring to claim 8**, the combination of *Zuraski* and *Sindhu* teaches wherein the portion of entries comprises an address space corresponding to the context [see column 1, lines 29-41.]

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11. **Referring to claims 10, 13, 15**, the combination of *Zuraski* and *Sindhu* teaches further comprising invalidating entries of a filter coupled to the translation look aside buffer corresponding to the portion of entries [see column 11, lines 14-20.]
12. **Referring to claim 14**, the combination of *Zuraski* and *Sindhu* teaches a method comprising: loading an entry into a pipeline resource of a processor, the entry corresponding to a page table [see column 1, lines 29-41 and column 9, lines 30-67]; and selectively updating the entry in the pipeline resource if the page table is updated during a context [see column 11, lines 1-20 and column 9, lines 30-67.]
13. **Referring to claim 16**, the combination of *Zuraski* and *Sindhu* teaches further comprising preserving the updated entry in the pipeline resource on a context switch [see column 11, lines 1-20, 46-65.]
14. **Referring to claim 19**, the combination of *Zuraski* and *Sindhu* teaches further comprising a filter coupled to the pipeline resource to select at least one of the plurality of address spaces to be flushed [see column 9, lines 30-67 and figure 2, element 40.]
15. **Referring to claim 20**, the combination of *Zuraski* and *Sindhu* teaches wherein the filter comprises a content addressable memory [see figure 3, elements 40, 402, 'CAM'.]
16. **Referring to claim 28**, *Zuraski* teaches a system comprising: a first processor having a pipeline resource having a plurality of address spaces [see column 14, lines 1-5, 'processor'], each of the plurality address spaces

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corresponding to one of a plurality of contexts [see column 9, lines 30-45 and column 1, lines 29-41], and a dynamic random access memory coupled to the first processor [see column 14, lines 6-11, 'DRAM'] however does not set forth the limitation of the plurality of address spaces selectively flushable. *Sindhu* teaches the limitation of flushing a portion of the pipeline resource corresponding to an address space including the entry [see column 15, line 65 to column 16, line 20 - flush entry, flush space and flush cache] in order to provide a space and time efficient address translation technique for use with multiple address space which would permit flexible access to shared data.

One of ordinary skill in the art at the time of applicant's invention would have clearly recognized that it is quite advantageous for the system of *Zuraski* to implement the limitation of flushing a portion of the pipeline resource corresponding to an address space including the entry in order to provide a space and time efficient address translation technique for use with multiple address space which would permit flexible access to shared data. It is for this reason that one of ordinary skill in the art would have been motivated to implement the limitation of flushing a portion of the pipeline resource corresponding to an address space including the entry.

17. **Referring to claim 29**, the combination of *Zuraski* and *Sindhu* teaches further comprising a second processor coupled to the first processor [see figure 3, element 406.]

18. **Referring to claim 30**, the combination of *Zuraski* and *Sindhu* teaches further comprising a filter coupled to the pipeline resource to snoop address

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information from the second processor [see figure 3, elements 'snoop address,' 406, 40.]

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

20. Claims 21-27 are rejected under 35 U.S.C. 102(e) as being anticipated by *Zuraski*.

21. **Referring to claims 21, 25, *Zuraski*** teaches a method comprising: dynamically partitioning a filter of a pipeline resource into a plurality of partitions [see column 10, lines 27-65.], each of the partitions corresponding to one of a plurality of address spaces [see figure 3, elements 402 and column 10, lines 27-40.]

22. **Referring to claims 22, 26, *Zuraski*** teaches further comprising sharing the pipeline resource among a plurality of applications, each corresponding to one of the plurality of address spaces [see column 1, lines 22-41.]

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23. **Referring to claim 23**, the combination of *Zuraski* and *Sindhu* teaches wherein each of the plurality of partitions includes a fixed portion and wherein the filter further comprises a dynamic portion [see column 2, lines 36-51.]

24. **Referring to claims 24, 27**, the combination of *Zuraski* and *Sindhu* teaches further comprising allocating at least part of the dynamic portion to one of the plurality of applications that has consumed the fixed portion of one of the plurality of partitions [see column 10, lines 27-65.]

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NIKETA I. PATEL whose telephone number is (571)272-4156. The examiner can normally be reached on M-F 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on (571) 272 4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Niketa I. Patel/
Primary Examiner, Art Unit 2181